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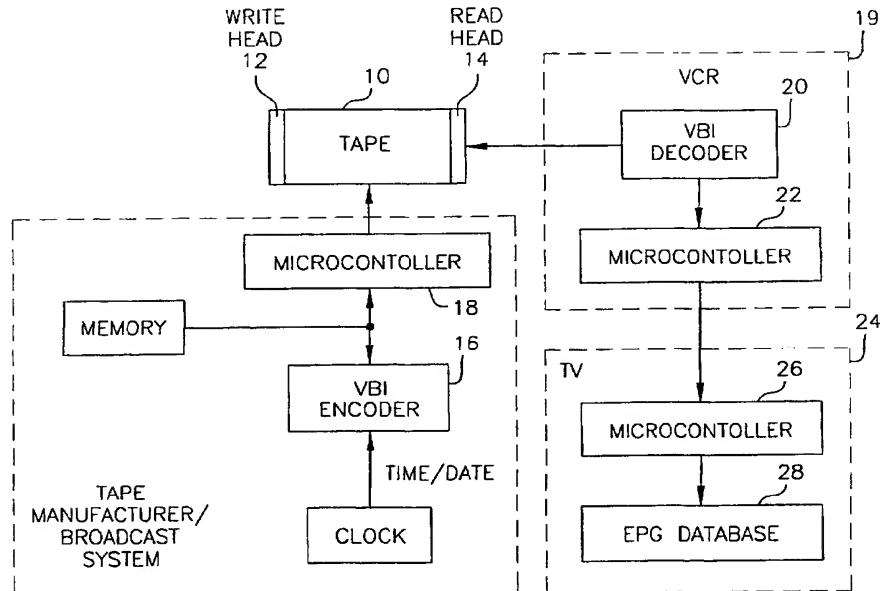
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(54) Title: ENHANCED VCR TAPES



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(57) Abstract: A system and method are described for storing VBI information relating to the material contained on a video storage medium on the VBI portion of the video storage medium, retrieving the VBI information from the video storage device, and displaying the VBI information on a video display system as part of an interactive television system.

## BACKGROUND OF THE INVENTION

Use of video cassette tapes with vertical blanking lines for containing information such as program indexing information is known in the prior art, as is disclosed in U.S. application Ser. No. 08/429,740 (attorney docket number 1148/25337), incorporated herein by reference. The program indexing information is used to jump to a particular program recorded on the tape.

## SUMMARY OF THE INVENTION

The system and method of the present invention are described for storing information relating to the material contained in the video storage medium, retrieving the Vertical Blanking Information (“VBI”) information from the video storage medium via the video storage device and displaying the VBI information on a video display system as part of the interactive television system. In addition, the interactive television system can add an additional menu item or a button when sufficient information is downloaded from the video storage device. The information relating to the material includes articles about performers, advertisements, trivia information, or web links. The video storage medium includes a VCR tape or a DVD. The video storage device includes a VCR or a DVD player. The video display system includes a computer monitor or television. The interactive television system includes an Electronic Programming Guide.

## BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a block diagram of a system for creating and reading enhanced VCR cassette tapes according to one embodiment of the invention.

FIG. 2 is a graphical representation of one embodiment of an EPG display for usage with enhanced VCR tapes.

FIG. 3 is a graphical representation of one embodiment of an EPG display depicting a Video option of the EPG display.

FIG. 4 is a graphical representation of one embodiment of the EPG display upon selection of an ARTICLES entry from the menu described in FIG. 3.

## DETAILED DESCRIPTION OF THE INVENTION

The idea of inserting Vertical Blanking Information (“VBI”) data onto a video cassette tape is extended in the present system and method for enhanced VCR cassette tapes. In general terms, the system and method according to the present invention is directed to storing into VBI portions of the tape, information related to a movie or other material recorded on the tape. For instance, if the tape contains a movie, the VBI data might include news and magazine articles about the actors, trivia information about the making of the movie, headline ads advertising other movies, web links to resources related to the movie and the like. Such enhanced VCR tapes may

1 be rented or bought from video rental and sales places such as Blockbuster or Hollywood Video.

5 A user may rent or purchase an enhanced VCR tape and view the information stored in the VBI portion of the tape, by using a VCR player and a television unit configured by an electronic program guide ("EPG"). Labels on the VCR may alert the user that additional information about the movie being rented or bought may be accessible through the television unit's EPG.

10 Information stored in the VBI portion of the tape is downloaded to the EPG database as the user plays the tape and watches the recorded movie. After sufficient information has been downloaded, the system causes an extra button or menu option to appear on the EPG. The extra button or menu option gives access to the downloaded information.

15 FIG. 1 is a block diagram of a system for creating and reading enhanced VCR cassette tapes according to one embodiment of the invention. The VCR tape 10 is a conventional video cassette having a magnetic tape packaged in a cartridge or cassette housing. The VCR tape 10 can be an 8mm tape used in some camcorders, a BETA format tape, or a VHS format tape, all of which use the same general tape layout. The tape 10 comprises a write head 12 and a read head 14 for writing and reading audio/video signals and VBI data to and from the tape 10.

20 According to one embodiment of the invention, the tape 10 is divided into three areas. A narrow strip running along the upper edge of the tape 10 is an audio track which contains audio signals. A second narrow strip running along the bottom edge of the tape 10 is a control track which contains control signals. The middle area is for video signals which are recorded in pairs 25 of parallel fields going up and down the width of the tape 10 at a slight angle. A tape manufacturer, information broadcasting system, or tape rental company, uses a VBI encoder 16 to encode the VBI data that is to be inserted into the tape 10. A microcontroller 18 interfacing with the VBI encoder 16 accesses the write head 12 of the tape and inserts the data in the VBI portions of the video track or in the control track. A time stamp may also be inserted at the beginning of the VBI data.

30 The VBI information is encoded as downloadable packets. According to one embodiment of the invention, these packets include a General Article Service (GAS) Definition packet, Text Object packets, and Article packets. Advertisement packets may be optionally inserted into the tape.

35 All of the packets include a packet header including a packet ID number, the number of bytes in the packet, and the number of blocks in the packet. The GAS packet includes the packet header and one or more of the packet-specific envelopes. One of such envelopes is a service envelope that defines the service to be rendered as a video service. The service envelope includes the video Service ID, and further defines several parameters for the service including the service name, priority code, number of articles, number of categories, and channel ID of the data source.

A Text Object packet includes a packet header, a descriptor envelope and one or more content envelopes. The descriptor envelope matches a Text ID to the text included in the content

1 envelope(s). The text might be the text in a magazine article, web site links, and the like.

5 The Article packet includes the packet header and one or more packet-specific envelopes. One such envelope is an article envelope which defines the service. The article envelope matches an Article ID with a Service ID in the GAS packet. The Article ID is also matched to a list of Text IDs in the Text Object packets. Thus, the appropriate text packets may be downloaded for a particular service, in this case, the video service.

10 The encoded packets become available as the user plays the enhanced tape in a VCR player 19 interfaced with a television unit 24 configured with an EPG. The VCR player 19 includes a VBI decoder 20, which decodes and extracts the VBI data from the VCR tape 10. The VBI decoder 20 is interfaced with the VCR microcontroller 22. The VCR microcontroller 22 transmits the decoded data to a microcontroller 26 resident in the TV unit.

15 When the television microcontroller 26 receives a GAS definition packet for the first time, it proceeds to define a new video service, and awaits for the Text Object and Article packets. When those are received, they are stored in the EPG database 28. The television microcontroller 26 also causes a VIDEO option to appear on the guide.

20 At the end of the movie, or as soon as the necessary information packets have been received, a viewer may enter the EPG to get more information about the movie on the tape 10. The video service remains on the EPG for a specific amount of time, determined by the data and time enclosed on the tape 10 at the beginning of the VBI data. If the viewer plays another tape with encoded VBI data within this timeframe, the television microcontroller 26 does not cause a new VIDEO option to appear on the guide. Rather, information about the new program is accessible via the previously installed VIDEO option. After a specified amount of time, the television microcontroller 26 deletes the VIDEO option on the guide and the associated information in the EPG database 28.

25 FIG. 2 is a graphical representation of one embodiment of an EPG display for usage with the enhanced VCR tapes. The disclosure of U.S. Patent Application No. 09/120488 (attorney docket No. 32714/LTR/E190) is incorporated herein by reference. In the embodiment illustrated in FIG. 2, the real-time video of the currently-tuned television program is displayed in a Picture-In-Picture Window 30. Panel Ad Windows 32 and 34 display commercial advertisements. 30 Contextually sensitive action buttons 36 and 38, are located at the top of the display. The text next to each button defines the function of each button, and may change based on the context of the operation of the EPG.

35 An information box 40 allows display of more detailed information regarding a selected item on the EPG. A navigation bar 42 allows a user to view different types of information and interact with the EPG. A grid guide portion 44 includes a plurality of program tiles with program scheduling information. The grid guide 44 might also comprise advertisement tiles including advertisement information.

The viewer uses an IR remote control unit with up, down, right, and left arrow buttons to

1 select items on the EPG display. The viewer uses the arrow buttons to maneuver a cursor on the display screen, and presses a select button when the cursor is on the item that the viewer wants to choose. An input-response module in the television unit 24 responds to the position of the pointer and the particular display currently displayed to generate a responsive display or take a  
5 particular action. In another embodiment the viewer uses function buttons on the remote control unit to make a selection. In yet another embodiment, the viewer uses a user input device such as a mouse, track ball, touch pad, or the like, to move the cursor about the display screen.

As a user views a recorded video program containing encoded VBI data, a textual message might be overlaid on top of the program being viewed, notifying the viewer that such data is available from the EPG. The viewer might, at this point, be asked to make a selection with the input device to download the data to the EPG database 28. Upon such selection, the data is downloaded throughout the viewing of the recorded program. Alternatively, the download occurs automatically without specific instructions from the user. The download is seamless and does not interrupt the viewing of the recorded program.

10 15 A user accesses the downloaded VBI data by selecting a VIDEO option of the EPG display. The VIDEO option may appear on the navigational bar 42 of the EPG. Alternatively, the VIDEO option may appear as a contextually sensitive action button.

20 FIG. 3 is a graphical representation of an EPG display depicting a VIDEO option 46 on a navigational bar 48. The user accesses the downloaded information by using the input unit and selecting the VIDEO option 46. According to the embodiment of FIG. 3, the PIP window 50, allows the user to continue viewing the video program while the EPG is displayed.

25 Panel ad windows 52 and 54 might be used to display advertising information of other movies, programs, or shows available for rental. In this case, further information on the advertised movies is displayed on the information box 56 upon selection of an informational icon in the panel ad windows 52 and 54.

The EPG further displays a menu 58 of downloadable information for user access. Such information might include magazine and newspaper articles on the actors in the recorded movie, trivia information, and web site links to products, resources, and information on the Internet related to the recorded movie.

30 35 FIG. 4 is a graphical representation of the EPG display upon selection of an ARTICLES entry from the menu 58 in FIG. 3. If multiple levels of information are available for a selected item, only a portion of the information is initially displayed in the Information Box 56. In one embodiment, the user requests additional information by clicking the track ball, touchpad or otherwise indicating a selection through the user's input device. In yet another embodiment, an "i" icon at the end of the displayed information allows the user to view additional pages of information if desired by moving the cursor to the "i" icon and selecting the "i" icon.

Although this invention has been described in certain specific embodiments, those skilled in the art will have no difficulty devising variations which in no way depart from the scope and

1 spirit of the present invention. For instance, instead of recording VBI data onto VCR tapes, the data may be recorded on DVD, CD-ROM, or other mass video storage devices, without departing from the heart and scope of the present invention.

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## 1 WHAT IS CLAIMED IS:

1. A method for displaying information on a video display device utilizing an interactive television system, comprising the steps of:
  - 5 reading VBI data from a video storage medium;
  - decoding the VBI data using a VBI decoder;
  - storing the decoded VBI data in a memory;
  - displaying the decoded VBI data on the video display device as part of an interactive television display.
- 10 2. The method of claim 1, comprising the additional step of adding a new menu item when sufficient data is decoded from the video storage medium.
- 15 3. The method of claim 1, comprising the additional step of adding a button to the interactive television display when sufficient data is decoded from the video storage medium.
4. The method of claim 1, wherein the interactive television system is an Electronic Programming Guide.
- 20 5. The method of claim 1, wherein the memory is an Electronic Programming Guide database.
- 25 6. The method of claim 1, wherein the step of reading is performed by a video cassette recorder.
7. The method of claim 1, wherein the step of reading is performed by a DVD player.
8. The method of claim 1, wherein the video display device is a television.
- 30 9. The method of claim 1, wherein the video display device is a computer monitor.
10. The method of claim 1, wherein the VBI data is stored on the video storage medium by an information broadcasting system.
- 35 11. The method of claim 1, wherein the VBI data is stored on a video storage medium by a tape manufacturer.

- 1 12. The method of claim 1, wherein the VBI data is stored on the video storage medium by a tape rental company.
- 5 13. The method of claim 1, wherein the VBI data is articles about performers.
- 10 14. The method of claim 1, wherein the VBI data is trivia information.
- 15 15. The method of claim 1, wherein the VBI data is advertising information.
16. The method of claim 1, wherein the VBI data is one or more web link.
17. The method of claim 1, wherein the decoded VBI data is read upon receiving instructions from the interactive television system user.
18. The method of claim 1, wherein the decoded VBI data is automatically read by the interactive television system user.
19. A system for displaying information on a video display device utilizing an interactive television system, comprising:
  - 20 means for reading VBI data from a video storage medium;
  - means for decoding the VBI data;
  - means for storing the decoded VBI data;
  - means for displaying the decoded VBI data on the video display device as part of an interactive television display;
- 25 20. The system of claim 19, wherein a menu item is added when sufficient VBI data is decoded from the video storage medium.
21. The system of claim 19, wherein a button to the interactive television display is added when sufficient VBI data is decoded from the video storage medium.
- 30 22. The system of claim 19, wherein the VBI data is articles about performers.
23. The system of claim 19, wherein the VBI data is trivia information.
- 35 24. The system of claim 19, wherein the VBI data is advertising information.
25. The system of claim 19, wherein the VBI data is one or more web link.

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26. The system of claim 19, wherein the decoded VBI data is read upon receiving instructions from the interactive television system user.

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27. The system of claim 19, wherein the decoded VBI data is automatically read by the interactive television system user.

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28. A system for displaying information on a video display device utilizing an interactive television system, the system receiving video signals stored on a video storage medium from a video storage device, comprising:

a VBI data decoder that decodes VBI data stored on the video storage medium; a memory;

a first processor that interfaces the VBI data decoder with the second processor and controls the transfer of decoded VBI data from the video storage device;

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a second processor that stores at least a portion of the decoded VBI data in the memory, and displays at least a portion of the decoded VBI data on the video display device utilizing the interactive television display.

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29. The system of claim 28, wherein a menu item is added when sufficient VBI data is decoded from the video storage medium.

30. The system of claim 28, wherein a button to the interactive television display is added when sufficient VBI data is decoded from the video storage medium.

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31. The system of claim 28, wherein the first and second processors comprise one physical processor.

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32. The system of claim 28, wherein one processor interfaces the VBI data decoder with the video display device and a physically separate processor stores the decoded data in the memory and displays the decoded VBI data on the video display device utilizing the interactive television display.

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33. The system of claim 28, wherein a plurality of processors handle the functions described in claim 16.

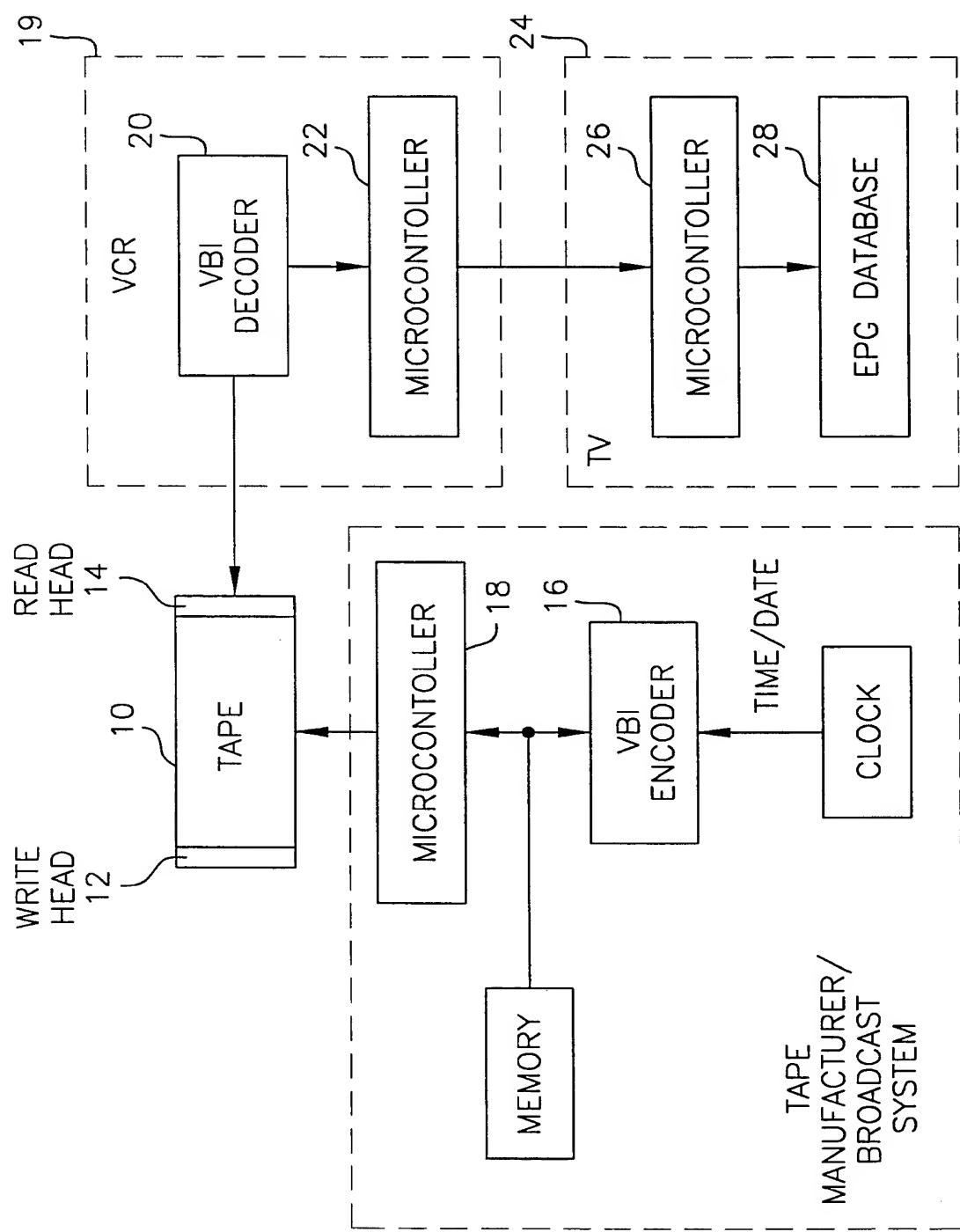


FIG. 1

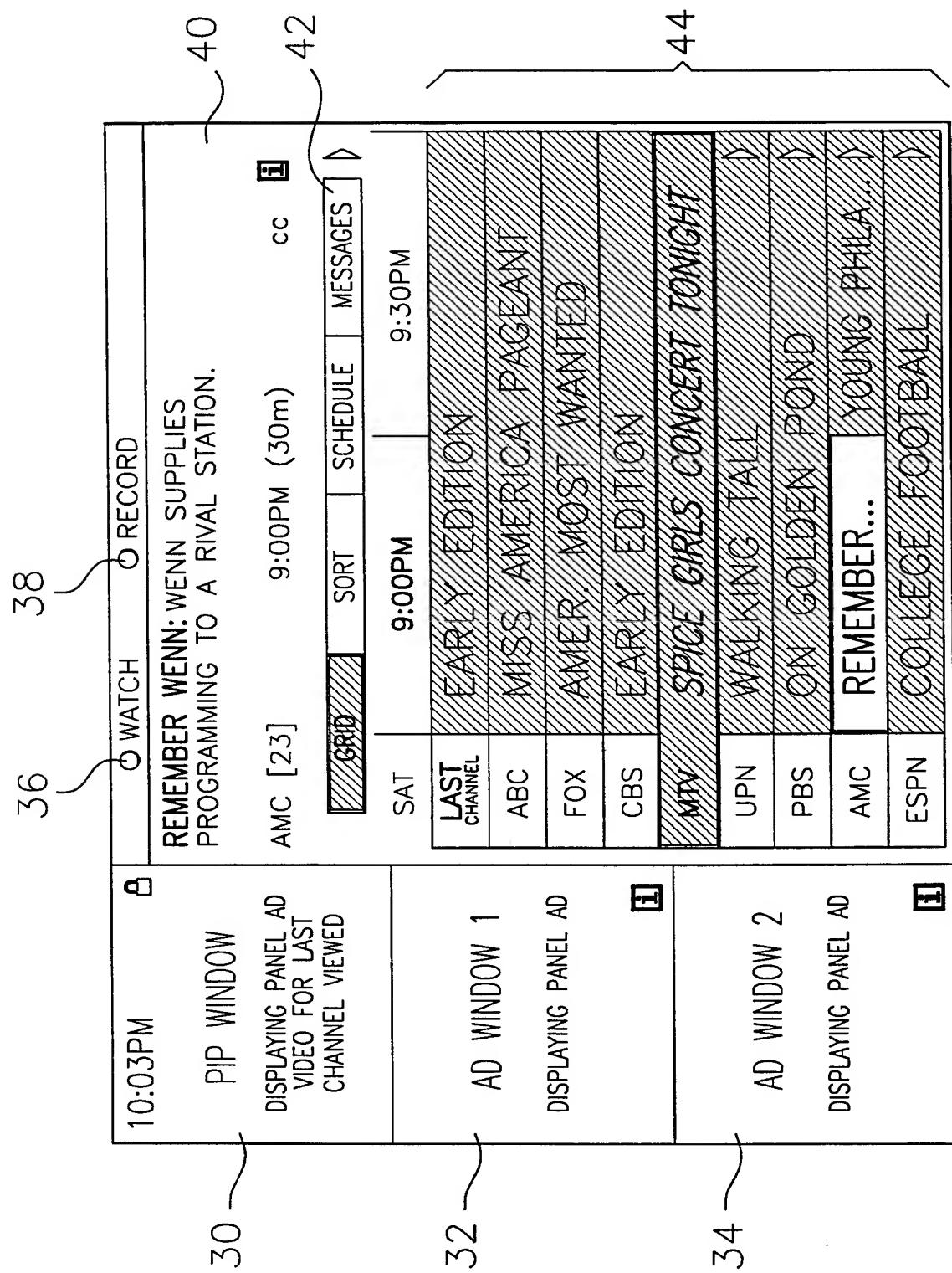


FIG. 2

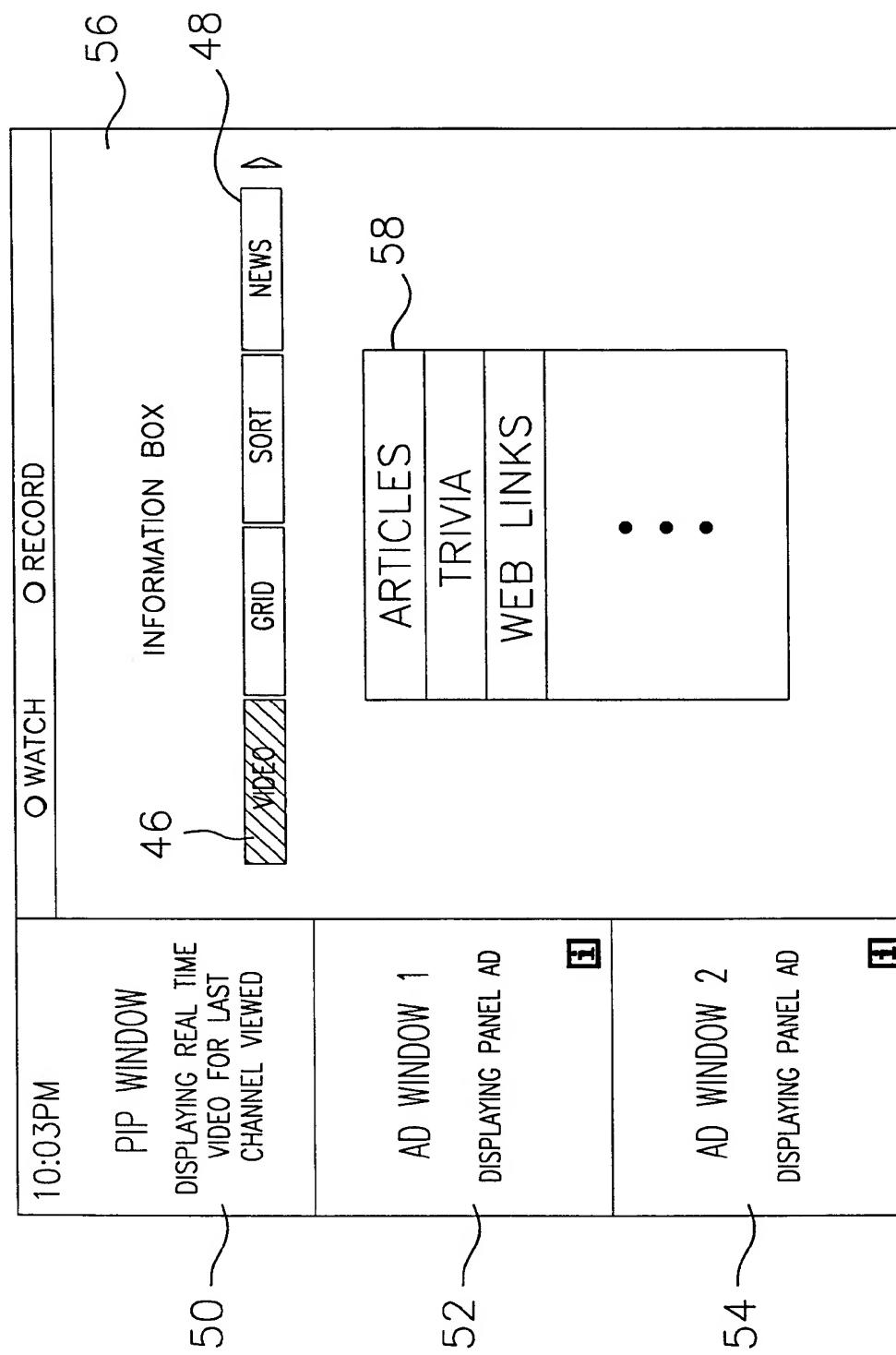


FIG. 3

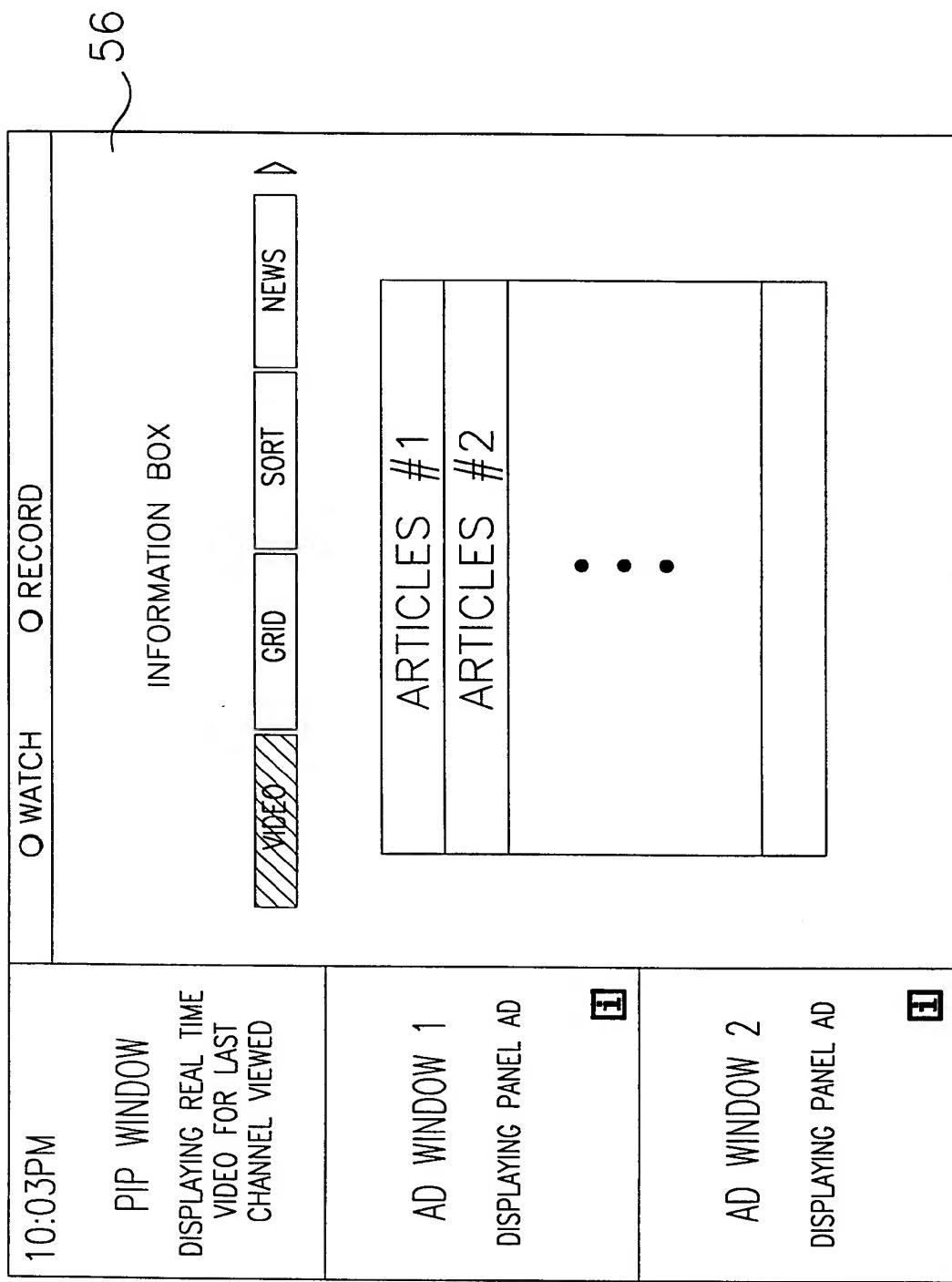


FIG. 4

# INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 00/40601

**A. CLASSIFICATION OF SUBJECT MATTER**  
 IPC 7 H04N5/445 H04N5/92 H04N7/088

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H04N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 99 12335 A (KONINKL PHILIPS ELECTRONICS NV ;PHILIPS AB (SE)) 11 March 1999 (1999-03-11) page 2, line 8 -page 3, line 11	1,6, 8-19, 22-28,32
A	page 7, line 17 -page 8, line 5 figure 5	2-5,7, 20,21, 29-31,33
A	WO 97 33434 A (EARTH WEB INC ;HIDARY JACK D (US); ACTV INC (US); SPIVACK NOVA T ()) 12 September 1997 (1997-09-12) page 10, line 12 - line 15 page 11, line 3 - line 21	1,19,28

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

\* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
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Date of the actual completion of the international search

8 November 2000

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## INTERNATIONAL SEARCH REPORT

Inte 'onal Application No  
PCT/US 00/40601

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

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**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International Application No

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